with the Author's compliments

8.

CONTRIBUTION TO

THE PLASTIC SURGERY OF THE FACE

BY

WILLIAM ANDERSON, F.R.C.S.,

SURGEON TO ST. THOMAS'S HOSPITAL.

Reprinted from THE LANCET, October 31, 1896

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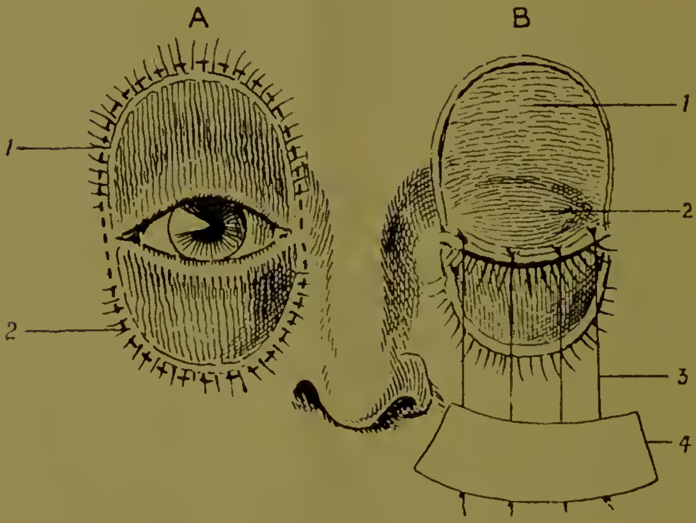
THERE are few deformities which cause such mental distress to the patients suffering from them as those which are illustrated and described in this series. That the means at our disposal for their remedy by plastic operation have increased will be appreciated by those who read the various methods used by Mr. Anderson. The treatment of the eversion of the eyelids in Case 1, and the use of a wire bridge. for the nose in Cases 2 and 3, are especially worthy of note. Throughout there are useful practical hints, whilst the improvement effected can be judged by the illustrations which accompany the text. These cases also show the amount of patient and skilful planning which is required from the surgeon who undertakes to relieve this class of deformity.

CASE 1. — A girl aged five years was admitted into St. Thomas's Hospital in August, 1894, with extensive scarring of the face and frontal region, the result of a fall into the fire in infancy. The scar, which replaced the whole depth of the skin, extended from a point a little in front of the bregma over the forehead, both cheeks, and the upper lip. The hair and eyebrows were destroyed, all four eyelids were strongly everted, the upper reaching to the superciliary ridges and the lower to the middle of the cheek, but the eyelashes were spared. The wing of the right nostril was lost and the upper lip was everted, its red border nearly touching the root of the nose, but the teeth were not exposed. The girl was a healthy and unusually tractable and intelligent child, and took a lively interest in the reparative measures that from time to time were undertaken on her behalf. The wide destruction of skin forbade any of the ordinary resources of plastic surgery, and it was determined to try the effect of epidermic grafting in restoring the eyelids to their places. The operations performed for this and other results of the cicatrisation were numerous and extended over a period of two years, the patient being repeatedly sent to her country home in the intervals. The first operation, which took place in August, 1894, was performed upon the right upper eyelid. An incision was made around the semilunar border of the everted mucous membrane about a line outside the eyelashes. The lid was then carefully dissected away from the orbital region, together with the row of lashes and the fibres of the orbicularis, which could be recognised by their direction. When the process was complete the lid could be completely drawn down beyond the normal line of the palpebral fissure, and was then held in this position by means of four horsehair threads passed through the tarsal border and fixed below to the cheek by a strip of adhesive plaster (Fig. 1). The large raw surface now exposed was covered with a single epidermic graft, of somewhat more than ordinary thickness,

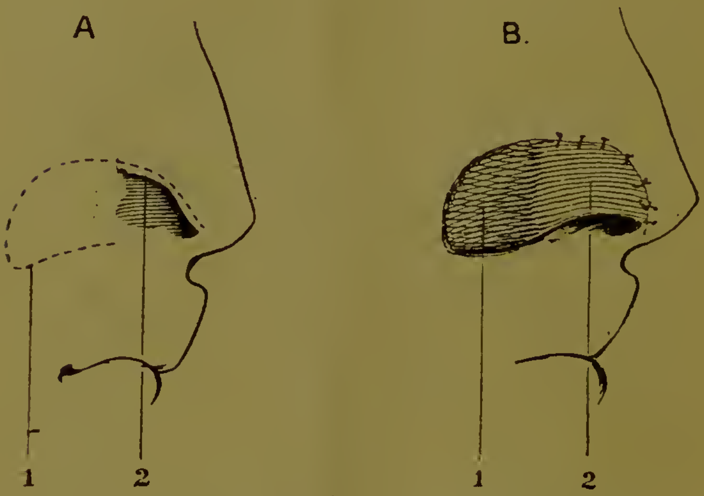
FIG 1.



Case 1.—A, Right eye, showing extent of ectropia and lines of incision (1, 2) outside the line of the lashes. B, Left eye, showing method of operation. 1, Raw surface of brow left by replacement of upper lid. 2, Upper lid covered with fibres of the orbicularis palpebrarum, held down by four horsehair threads (3) fixed in the free margin of the lid and kept in place by adhesive plaster (4) fixed on the cheek.

taken from the patient's thigh. It was then dusted over with iodoform and covered with blue protective gauze and a thick woollen dressing. The graft took perfectly, and the further progress was watched with some anxiety on account of the unknown degree of cicatricial contraction that would follow. The result justified the belief that it would be limited, and when the repair was complete the ectropion was reduced by three-fourths. A similar operation with a like result was next performed upon the left upper lid and the patient was then sent home. She was re-admitted in May, 1895, and a second grafting operation was effected upon the two upper lids with complete success. The lower lids were treated in the same manner, two operations being required for each, and the palpebral fissures were now restored almost to their normal aspect, the movements of the replaced lids were quite free, and the lashes had regained their natural direction. The loss of the right wing of the nose was remedied by a simple operation in which epidermic grafting also played a part. A suitable portion of the scarred integument of the cheek external to the gap was dissected up, leaving its base of attachment at the line of the curved furrow bounding the side of the nostril. The flap was then reversed so that its cutaneous surface was turned inwards towards the vestibule and its convex edge was brought forward to the pared border of the ala, where it was fixed by fine wire sutures (Fig. 2). An epidermic graft was then applied to the raw surface of the new ala and to the bed from which the flap was taken; the whole was sealed with aseptic wool steeped in collodion and covered in with a cyanide dressing. At the end of ten days the dressing and stitches were removed, when the healing process was found to be completed and the new ala looked almost exactly like its fellow of the opposite side. The change in the patient's aspect was now so favourable that a still further improvement was sought and an attempt was made to replace the lost eyebrows. A small area of the occiput was shaved and disinfected and a strip of skin of the requisite size and shape and nearly vertical in direction was excised. The piece, including the panniculus adiposus and hair bulbs and a thin layer of the galea aponeurotica, was transplanted into an incision in the position of the right eyebrow and was fixed by a number of fine silk sutures. A second strip was next taken from the same incision in the occiput and was transferred to the other brow. The parts were then covered with collodionised wool and dressed. The occipital wound healed by first intention, leaving a faint linear scar, but the new eyebrows showed signs of septicity at the end of four days and perished. The experiment was repeated a month later and unfortunately with the same result. The curved line of cicatrix representing the position of the eyebrow has improved the appearance of the brows, and all that was repellent in the appearance of the child is now removed (Fig. 3).

FIG. 2.

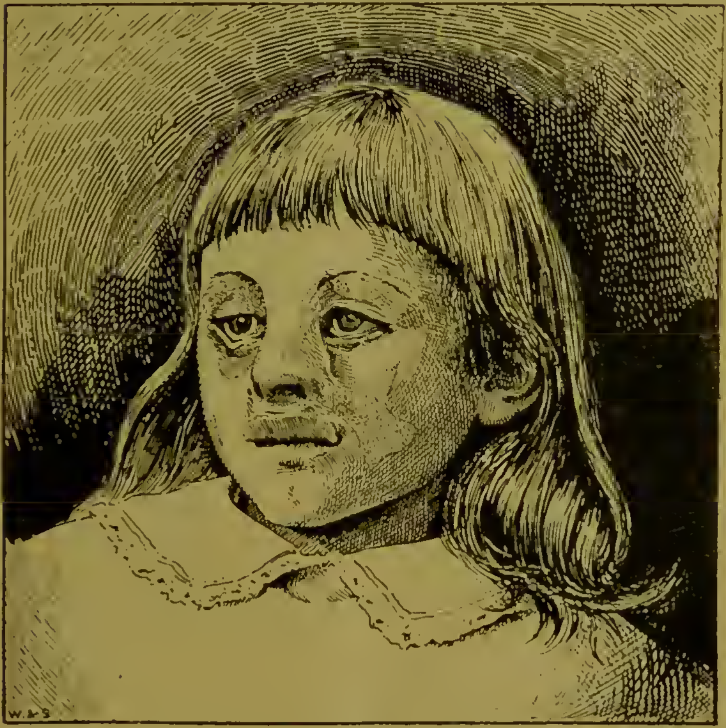


Case 1.—A, Showing loss of ala. Integument over whole area is cicatricial. 1, Outline of alar flap. 2, Pared edge of gap. B, Showing new ala *in situ*. 1, Raw surface left by detachment of flap. 2, Flap with raw surface outwards. Both surfaces were afterwards grafted.

CASE 2.—A girl aged eighteen years entered St. Thomas's Hospital on Sept. 15th, 1895, with a destructive syphilide of the face. The patient on admission presented a ghastly spectacle (Fig. 4); the nose, with the nasal bones and a portion of the septum, was completely destroyed. The glabella and both cheeks were covered with groups of deep ulcers, bounded by a serpiginous border of festooned outline. The lower eyelids were everted to the extent of nearly an inch and the upper lip was thickened and retracted, exposing the upper teeth and the alveolar border of the jaw.

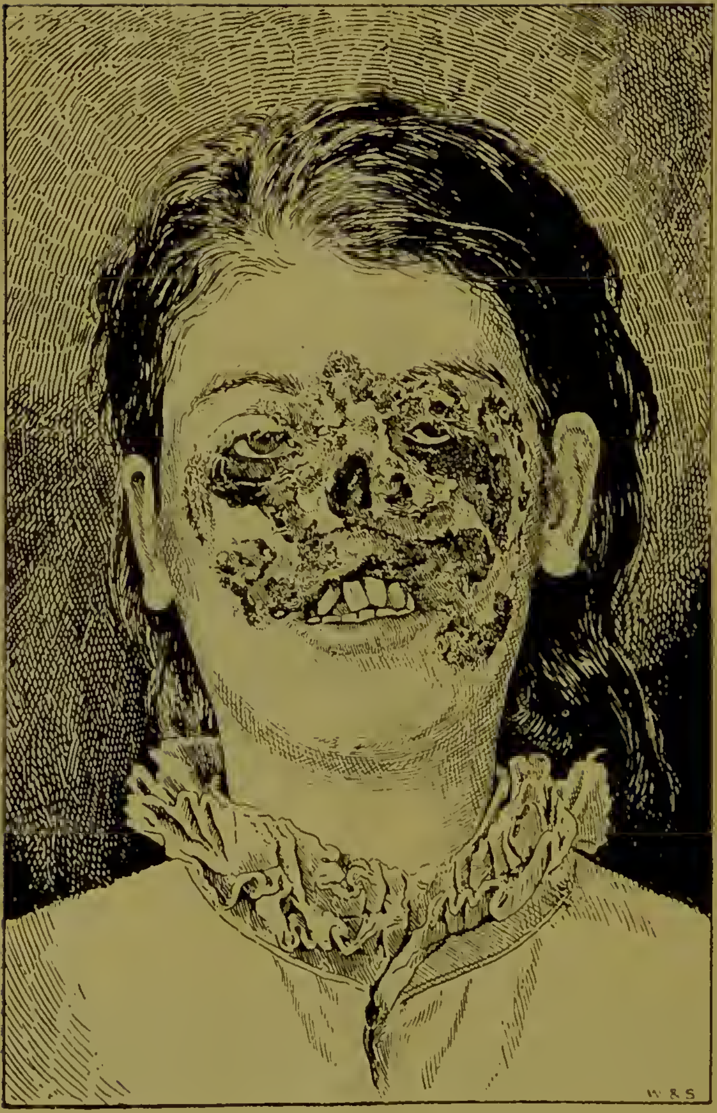
The ulceration extended into the nares and mouth; the nasal passages were filled with greenish offensive crusts, the mucous membrane of the lips and cheek were covered with superficial sores, and the fangs of the exposed incisor and canine teeth were loosened and partially denuded of their alveolar sheaths. Evidence of past destruction was seen in the soft palate, but the rest of the body was unscarred. There was no glandular enlargement, and although the girl was pallid, slender, and somewhat undersized she was free from any indication of functional or organic disease. The

FIG. 3.



Present condition of Case 1.

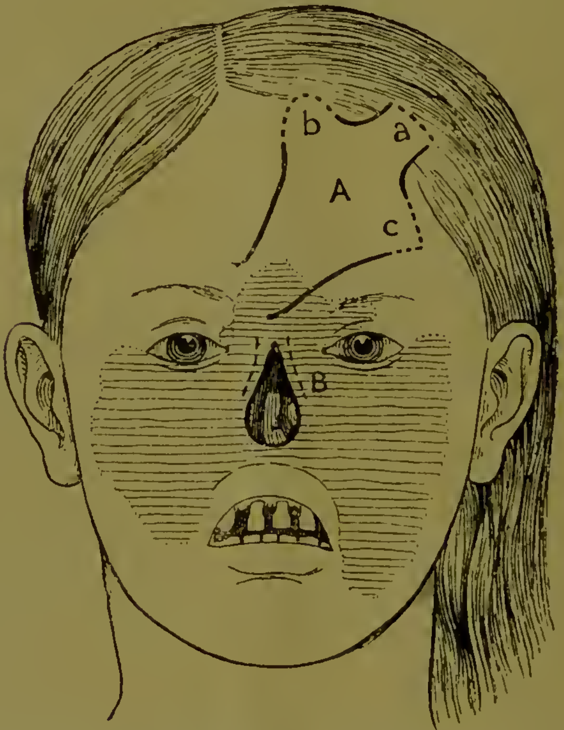
FIG. 4.



Case 2 on admission. From a photograph.

family history pointed to tuberculosis and inherited syphilis. The father was said to have died from phthisis, one brother suffered from "scrofulous disease and laryngitis" (probably syphilitic), and two older children died in infancy with signs of congenital syphilis. The patient herself had suffered from sores about the anus and snuffling in the nose during infancy, but recovering from these she remained fairly well until the age of thirteen years, when she was attacked by hoarseness and difficulty of breathing. During the next year the nose began to swell without pain or discharge and the throat became ulcerated. She was treated for about twelve months, but without benefit, and at the age of fifteen years a destructive ulceration appeared about the nose and spread on to the face. On admission to hospital iodide of potassium was prescribed in doses increasing rapidly to thirty grains daily. The facial ulcers were treated with an aristol ointment (half a drachm to the ounce) after removal of the crusts, and the sores in the nares and mouth were washed repeatedly with pledglets of lint steeped in a weak solution of perchloride of mercury, and dusted with iodoform. A rapid improvement ensued, and at the end of five weeks the sores were completely cicatrised. The patient was then sent into the country to re-establish her health. The first operations, in January last, were directed to the replacement of the lower lids; this was successfully effected by epidermic grafting in the same manner as in Case 1. The patient was then sent into the country. She was re-admitted in May and the question of rhinoplasty was considered. The case was a very unfavourable one on account of the feeble constitution of the patient and the extensive destruction of tissues, but the girl and her friends, to whom the risk of failure was explained, begged that the attempt might be made. The first stage of the operation was performed on May 23rd. The skin having been rendered aseptic *secundum artem*, an oblique flap of the size and shape shown in Fig. 5 was marked out upon the forehead, the portion destined to form the future septum and left ala encroaching upon the hairy scalp. The axis of the flap formed an angle of about 40° with the mesial line; the septal process was left broad in order to secure a good union with the lower margin of the nasal flap, and the right lateral border was made somewhat longer than the left to allow for the greater distance to be traversed by the right alar extremity in passing to its new position. The pedicle itself, which derived its supply from the right half of the forehead, was in great part cicatricial on the surface, but the deeper tissue appeared to be free. Incisions were then made through the skin from the side of the pedicle to the upper end of each alar prominence, and from the lower ends of these to the end of the septal process, the root of the pedicle, the extremity of the septum, and the two alar angles being left undivided. By means of a careful dissection the skin flap was raised, leaving the muscles and periosteum in their normal position with relation to the bone, and the separation was maintained

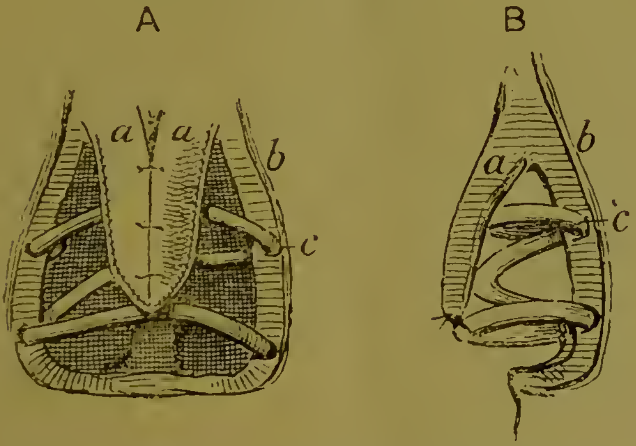
Fig. 5.



Case 2.—Diagram showing outline of frontal flap, A, with its septal and two alar angles, *a*, *b*, *c*. The parts of the border divided in the first stage of the operation are shown in continuous line, those in the later stages in dotted line. The line of the nasal bone flaps is shown at B in dotted line.

by pieces of green protective drawn through the marginal incisions. Iodoform powder was next dusted over the outer surface of the flap and adjacent integument; upon this was laid a piece of green protective, and the whole forehead was covered with a thick layer of salicylic wool lightly fixed in place by a bandage. The dressing was left undisturbed until the 30th, when it was removed, and as all appeared to be well the two alæ were freed and the dressing renewed. The flap was now held in place only by the pedicle and septal process. On June 4th the latter was divided and the flap turned over. Its deep aspect as well as the bed from which it had been detached was found to be granulating healthily, and after cleansing with a warm saturated solution of boracic acid the whole of the raw surface was covered with epidermic grafts taken from the patient's own thigh. A folded piece of protective, with a padding of iodoform gauze between the two layers, was then placed over the frontal wound, and the flap was restored to its original position. On the 8th the operation was completed. The flap was found to be pale but warm, and evidently supplied with

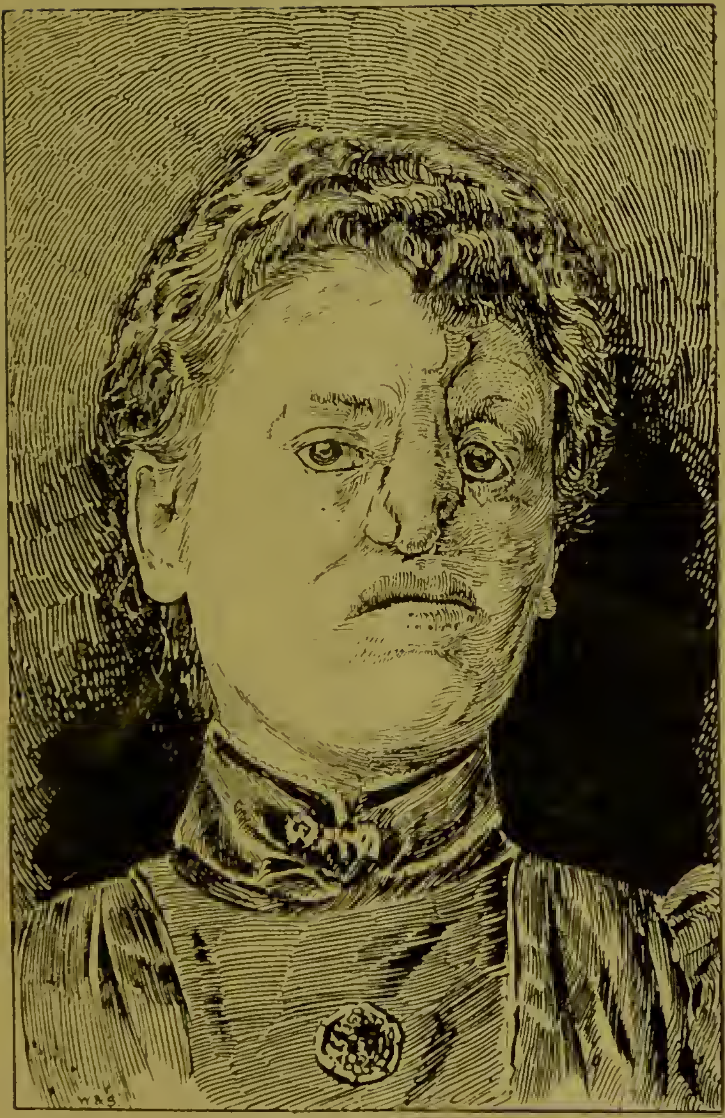
Fig. 6.



Case 2.—Diagram showing plan of wire bridge and new nasal bones. A, Front view. B, Side view. *a a*, Nasal bone flap detached from nasal processes of superior maxilla, united in middle line and fixed below to wire bridge. *b*, Pared cutaneous edge for reception of flap. *c*, Wire bridge passed through holes drilled in margins of bony gap.

blood through the pedicle, and the grafts on the under surface were firmly adherent. Its borders were pared with a slight bevelling at the expense of the under surface and the nasal gap was now prepared for their reception. The thin cicatricial tissue was dissected off somewhat freely, leaving the bony maxillary margin of the nares exposed with its periosteal covering for a width of about a quarter of an inch. With a fine saw a bone flap was detached from the upper two-thirds of each border, leaving it fixed by the soft parts at its frontal extremity (Fig. 6, A). The flaps, including thin friable bone, covered externally with periosteum and internally with peritoneum and mucous membrane, were then drawn together in the middle line by three fine sutures of catgut. Two holes were next drilled on each side of the lower two-thirds of the nasal gap, and a piece of silver wire of sufficient thickness to afford a firm support and not too strong to offer any difficulty of manipulation was passed through the upper hole on the left side, across the nasal gap, forming an angle projecting outwards in the middle line; it was then made to traverse the upper hole on the right side, cross diagonally to the lower hole on the left side, and after paſsing through this to cross over to the lower hole on the right side (Fig. 6, B). The nasal gap was thus bridged by three firm silver bars, two horizontal and one oblique, each forming an angle projecting forwards in the middle line. To the upper of these angles was fixed the limp mesial bone flap, which would otherwise have been incapable of sustaining itself in a serviceable position. The skin flap was finally twisted into place and fixed by a row of fine silver wire sutures. It was found that the left alar border was too short, through an insufficient allowance of length in the corresponding margin in planning the flap. The septum was broader than its permanent form required, but this was a temporary necessity to ensure good nutrition in the early stage of repair; the superfluous breadth, moreover, was capable of being utilised later in compensating for alar deficiencies. After inserting two pieces of tubing into the nostrils the whole surface was dusted with iodoform and dressed with protective and salicylic wool. The progress was good, union took place along the whole line, and the frontal wound healed with very little contraction. The new nose gradually assumed a normal colour and its sensibility began to return at the end of ten days. There was no discharge from the interior of the nares, the wire bridge caused no irritation, and the mesial bone became firm and strong in its new position. The twisting of the

FIG. 7.

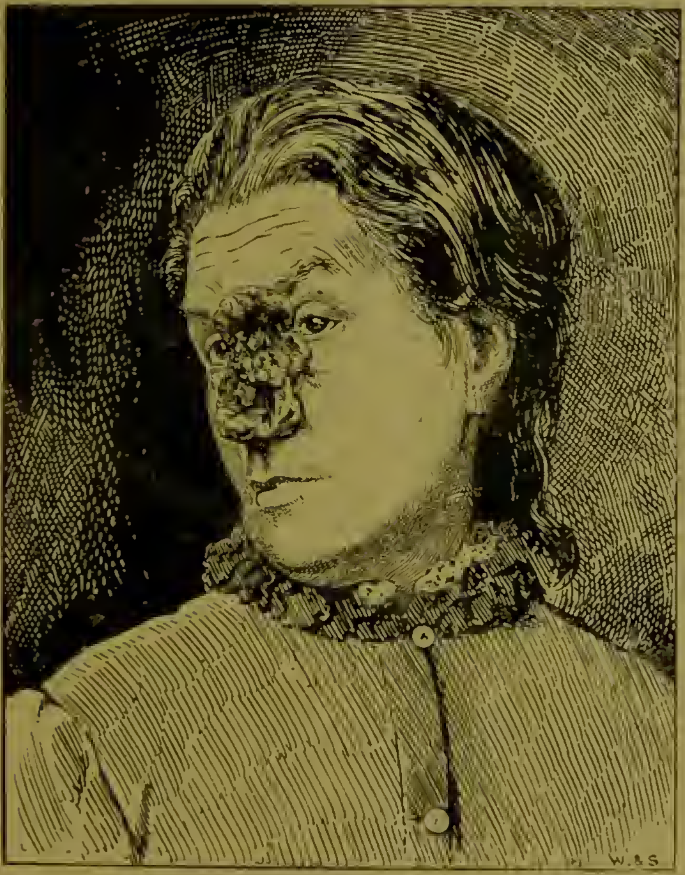


Present condition of Case 2.

pedicle left little or no deformity and the whole nose was fairly prominent. The nasal flap having become naturalised an operation was undertaken for the improvement of the retracted lip. This was effected after the method of Dieffenbach by a V-shaped incision, the two horns beginning one on each side immediately below the alæ nasi and meeting in the middle of the free border of the lip; the deep tissues were then freed and the upper borders of two flaps were drawn down and united to each other, leaving the lips in contact and the teeth completely covered. (Fig. 7).

CASE 3.—A married woman aged forty-two years was admitted into St. Thomas's Hospital in April last with a large rodent ulcer of the nose. Nearly the whole of the nose was replaced by a red exuberant mass of new growth which extended on to the glabella, approaching close to the left inner canthus, and destroyed the nasal bridge as well as the whole of the left side and the greater part of the tip (Fig. 8). The nasal process of the right maxilla and its superjacent integuments, the lower part of the septum, and the right ala were spared. The growth was tuberose, with a red, dry surface and everted edges and showed little sensibility or sign of action. There was no glandular enlargement. The disease was said to have begun as a small tubercle on the bridge of the nose six years before. This was removed at the end of a year, but reappeared two years later, when it returned over the glabella. It was again removed, but without success, and during the nine months before admission had been growing rapidly. The patient was a thin, active woman of good general health, and there was nothing in the personal and family history that bore upon the genesis of the rodent ulcer. An operation for the removal of the disease was performed on April 6th. The patient having been placed with the head hanging down over the end of the table, to allow the free escape of blood, the superficial mass of new growth was excised, with a margin of about a third of an inch of apparently sound integument. The deeper extension now exposed was found to fill the frontal and anterior ethmoidal sinuses and to destroy the whole of the left nasal bone as well as a portion of the right, and a large part of the perpendicular plate of the ethmoid. The growth, with as much of the bone as could be safely removed, was gouged away and a layer of chloride of zinc paste was applied to the parts in which it was impossible to carry the excision wide of the disease. The whole gap was filled with iodoform gauze and left to granulate. The operation involved much loss of blood and some shock, but the patient quickly rallied. The result was far more satisfactory than might have been anticipated under the unfavourable conditions. After the separation of a few sloughs the healing process set in vigorously and there was no sign of recurrence. An

Fig. 8.

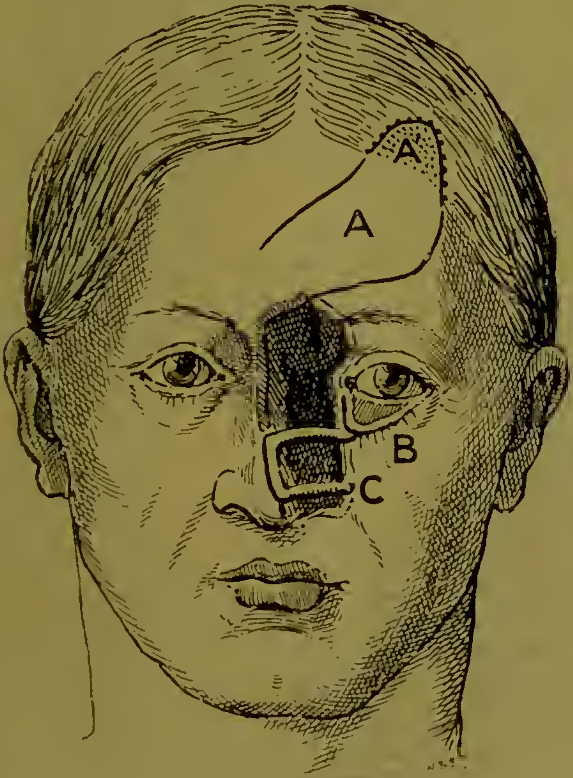


Case 3 on admission, showing extent and character of the rodent ulcer.

examination of the excised structures showed the growth to be, as diagnosed, a rodent ulcer. At the end of a month the cicatrisation appeared to be complete and sound, but the patient was kept under observation for three months longer, in view of the probability of a re-appearance of the disease. As the parts appeared to be quite sound at the end of this time and the patient was desirous of leaving England a second operation was undertaken to fill the huge gap left by the first. On July 18th, an oblique frontal flap of suitable shape having been marked out upon the previously prepared skin, its detachment was effected on the same plan as in Case 2, leaving the pedicle and the extremity corresponding to the tip and left ala of the new nose still in continuity with the general integument. The distal end was freed five days later, and the under surface of the flap as well as the area from which it was removed was covered with epidermic grafts. On the ninth day the implantation was effected. The edges of the frontonasal chasm having been pared, the flap, also pared, was brought down and held temporarily in place. It was then seen that each inspiration drew it against the remains of the septum and completely obstructed the passage of air on the affected side that an internal support of some kind was essential. Two holes were bored in the left side of the nasal border, and a piece of silver wire, carried through the upper of these, was made to run forward as far as the anterior border of the septum, then to bend downwards at right angles, resting against the septal border for about two-thirds of an inch, and finally turning sharply outwards and backwards, to be fixed in the lower hole (Fig. 9). The flap was sutured in its new position and respiration through the nasal opening was found to be unimpeded. During the apposition of the flap the retracted lower lid was freed by an incision close to its ciliary border; the lid was then drawn up into position, when the widely separated cutaneous edges of the gap left by this replacement formed a very obtuse angle and could be united without difficulty to the straight border of the nasal flap. In this manner the ectropion was remedied without loss of substance or exposure of any raw surface. Union occurred by first intention, the wire bridge caused no irritation, and the little disfigurement due to the redundancy of tissue in portions of the flap can be readily set right by a final trimming. Respiration is quite free (Fig. 10).

Remarks by Mr. ANDERSON.—The lessons afforded by Case 1 are instructive. It shows, first, that the contraction which takes place under an epidermic graft is far less than that which occurs during the granulation of an open wound, apparently in the proportion of 1 to 3, a fact which gives the operation a large range of utility in fields where more severe

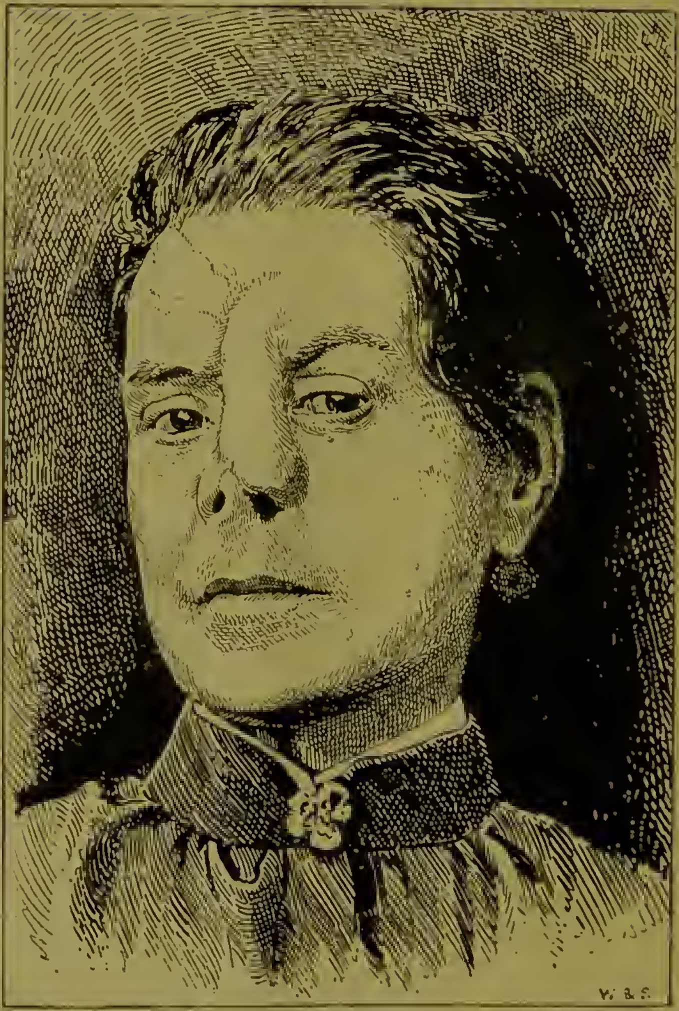
Fig. 9.



Case 3.—Sketch showing extent of gap left after removal of the rodent ulcer. A, Outline of frontal flap. A', Angle encroaching upon hairy scalp, subsequently forming tip of nose and left ala. B, Ectropion relieved during adaptation of flap. C, Wire bridge *in situ*.

methods are at present employed; and, secondly, that the grafted raw surface of a plastic flap may be made to take the place of the cutaneous surface where the ordinary method of torsion of a pedicle is inconvenient. Although the failure of

Fig. 10.



Present condition of Case 3.

the eyebrow grafts was disappointing, it was not altogether discouraging. It is likely that a more perfect disinfection of the occipital skin and the fixation of the grafts in their new position by collodionised wool without the injurious manipulation involved by suture would offer a good prospect of success. In Case 2 the features of the operation deserving comment are as follows: 1. The shape and obliquity of the flap. The oblique flap which has been used in a large number of cases by Brigade-Surgeon-Lieutenant-Colonel Keegan, and which is fully described in a valuable article in THE LANCET of Feb. 21st, 1891, has the advantage over the familiar mesial flap that some forty degrees less torsion of the pedicle are required to bring it into place, and thus the risk of strangulation after the operation is lessened and the disfigurement at the root of the new nose is minimised. On the other hand it may predispose to some deformity from retraction of the upper lid and eyebrow on the side over which the flap inclines, but this disadvantage is lessened by the use of epidermic grafts over the raw surface. In shaping the flap it is a common oversight to make it symmetrical in relation to a mesial line drawn from the pedicle to the septal process, forgetting that in the rotation necessary for placing it in its new position one alar angle must travel through a greater distance than the other to reach its destined point of fixation, and that hence the corresponding border should be longer than its fellow. In the operation in Case 2 an insufficient allowance was made for this requirement as well as for the contraction of the flap, and the alæ, especially the left, are too high in relation to the tip of the nose. It is desirable that the septal process should be made of greater breadth than its permanent form demands, because it is likely to perish if too narrow and because its increased breadth provides material for the repair of any defects in the alæ. In Case 2 a strip will afterwards be taken from each side of the septum, leaving it attached at the tip of the nose, and will then be carried up to the pared edge of the corresponding ala, the contraction of the nostril being prevented by an epidermic graft applied along the cut border. 2. The sub-division into stages of the process of detachment of the flap. This, a recognised procedure in modern plastic surgery, has seldom been considered necessary in rhinoplasty. The operation was always completed at one sitting by Keegan, but his patients were healthy subjects, whose noses had been sacrificed to penal amputation and not to disease, and retained the nasal bones intact. In the present cases, as in many of those which call for reparative measures in Europe, an enfeebled constitution and much damage to adjacent tissues necessitate special precaution, and there is indeed little doubt that the flap with its cicatricial pedicle would have perished had its separation been completed at one sitting; moreover, under any circumstances the more complete vascularisation of the flap secured by the interrupted method of detachment favours rapidity and strength of union in its new position, as well as increased safety from gangrene. 3. The grafting of the raw surface of the flap and forehead. The application of epidermic grafts to the under aspect of the flap has many advantages. The conversion of a granulating into an epithelial surface obviates the tedious process of cicatrisation within the cavity of the newly-made nose, and at the same time it removes danger of infection, lessens the amount of contraction, and enables the patient to bear any internal support that may be devised. The plan might be employed with equal advantage in certain other plastic operations, such as that for extroversion of the bladder. The grafting of the frontal surface left by the detachment of the flap is of service, not only in hastening the healing process, but also in limiting the cicatricial contraction, which might otherwise produce disfigurement about the eyebrow and upper eyelid. In this patient there is a slight elevation of the left eyebrow and a retraction of the inner side of the lid, but the defect is scarcely enough to attract attention. 4. The preparation of a new nasal bone from the nasal processes of the superior maxilla. The plan adopted was on the principle of that of Langenbeck, but the bone available for the purpose was so scanty and friable that the flaps were incapable of maintaining themselves in their new position. Their fixation and subsequent consolidation were made possible by the artificial bridge, and it may be easily demonstrated by examination that this solidification has taken place satisfactorily. 5. The construction of an artificial bridge. One of the weak points in rhinoplasty when performed for cases where there has been great destruction of bone is that the new nose unsustained by any firm tissues collapses and contracts and is liable to impede nasal respiration. Hitherto foreign substances introduced into the new nose for purposes of support have been ill tolerated; but Cases 2 and 3 show that a material like silver if fixed to the sides of the gap and moulded into suitable shape will maintain its position and, providing it is not brought into contact with a granulating surface, will cause no irritation. In fact, neither of the two patients is conscious of its presence within the nose. The durability of the metal under the present circumstances remains to be demonstrated, but if necessary it might be replaced by gold or platinum. The result in Case 2 may be considered satisfactory. The patient's face is, indeed, far from beautiful, but the removal of the ectropion, the closure of the nasal chasm, and the concealment of the gums and teeth by the treatment of the retracted upper lip have removed everything that was repulsive, and she is able to appear in the streets without attracting notice. Some final touches are required to widen the nostrils and enlarge the alæ in the manner indicated, but the case is practically complete. It is to be noticed that the hair growing upon the septal and left alar portion of the new nose has changed in character since its transplantation from the scalp. It is much thinner than before and has lost most of its colour and hence requires only a little attention on the part of the patient to prevent it from becoming a disfigurement. The problem in Case 3 was more simple than in the previous case because the destruction of the nasal tissues was less complete. A fair pedicle was forthcoming, and the patient, though much older than was the one in Case 2, was of better constitution. The detachment of the flap might, undoubtedly, have been accomplished at one sitting with but little risk, but the advantages appeared to be nearly all in favour of the plan adopted, which secured the best possible vascularisation of the tissue before bringing it into its new position. There is, of course, a possibility that the original disease will reappear. Should this happen it will be desirable as soon as the first signs are manifest to detach the nasal flap at the line of cicatrix and deal with the growth as we best may, according to the conditions revealed. The remarkably exuberant development of the "rodent" cell growth is of some clinical rarity and interest. I have to thank my former dresser, Mr. Cobb, for the photographs he has kindly taken to illustrate this paper.

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